

REMARKS/ARGUMENTS

The present invention relates to an improved thin film magnetic head and magnetic recording apparatus, in which the coil resistance value is lowered, the quantity of generated heat is reduced, and the high-frequency characteristic is improved by shortening a yoke length.

The objection to the specification and the rejection of claims 1-22 under 35 U.S.C. § 112, first paragraph are obviated by amendment.

Regarding the phrases “first pole portion” and “reduced track width”, Applicants submit that the claims 1 and 12 have been amended to recite that --said first pole portion comprises a pole piece having an upper end part narrowed in track width at each side of said pole piece--. As explained on page 22, line 19 to page 23, line 3 of the present specification, the pole piece 214 (of the first pole portion) has the upper end part narrowed in track width at both sides so that the upper end part has a narrow track width PW, i.e., contributing to the reduced track width of the first pole portion. This narrowed track width is evidenced by Figure 4 of the present specification, which shows the reduced width of the upper portion of the pole piece 214 of the first pole portion P1, which is presented below for the Examiner's convenience.

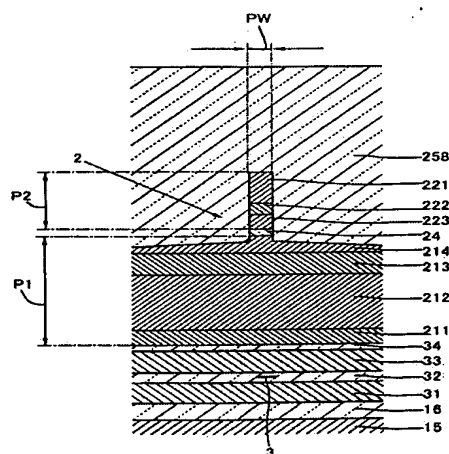


FIG.4

Regarding the first pole position **P1** projecting from the first magnetic film, Applicants submit that Figure 4, above, also clearly shows that the pole portion **P1** projects from the first magnetic layer **211**. The arrangement of the pole portion **P1**, in relation to the first magnetic layer **211**, is also discussed in the specification at page 20, line 21 to page 22, line 12. Therefore, the specification clearly provides clear and proper antecedent basis for the claim language.

The rejection of claims 1-22 under 35 U.S.C. § 112, second paragraph is obviated by amendment.

In claims 1 and 12, the phrase “the space between coil turns” has been changed to --a space between coil turns--, and the phrase “the upper surfaces” has been changed to --upper surfaces--. Applicants submit that the space between coil turns (of first and second coils) is discussed throughout the present specification, e.g., at page 4, lines 9-11, page 4, line 23 to page 5, line 1, and page 7, line s18-21. The space is also shown in Figure 6, which shows that the second coil **232**, in a spiral shape, is fitted into the space between coil turns of the first coil **231**. In addition, the “upper surfaces” of the first coil **231** and the second coil **232**, which form the same plane, are shown in Figure 6, which is presented below for the Examiner’s convenience.

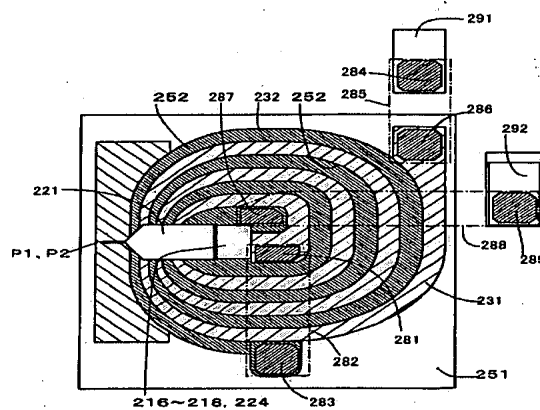


FIG.6

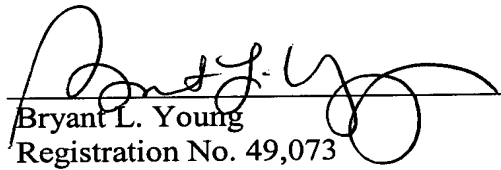
Application No. 10/673,172
Reply to Office Action of August 11, 2005

In view of the amendments and support for the amendments in the present specification and figures, Applicants request the withdrawal of the pending objections and rejections.

Applicants submit that this application is now in condition for allowance and early notification of such is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon


Bryant L. Young
Registration No. 49,073

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

ABSTRACT OF THE DISCLOSURE

The invention is directed to improvement of a thin film magnetic head of a magnetic recording apparatus. The magnetic head includes a write element, in which a first coil and a second coil are provided on a first insulating film formed on one surface of a first magnetic film and surround in a spiral form a back gap portion. One of the first coil and the second coil is fitted into the space between coil turns of the other, insulated from the coil turns of the other by a second insulating film, and the first and second coils are connected to each other so as to generate magnetic flux in the same direction. One of the first coil and the second coil has a side surface being adjacent to the pole portion with the second insulating film and another side surface being adjacent to the back gap portion with the second insulating film, and each of the side surfaces has a taper angle making the sectional shape of the coil narrower in the lower part and wider in the upper part. The upper surfaces of the first and second coils form the same plane.